

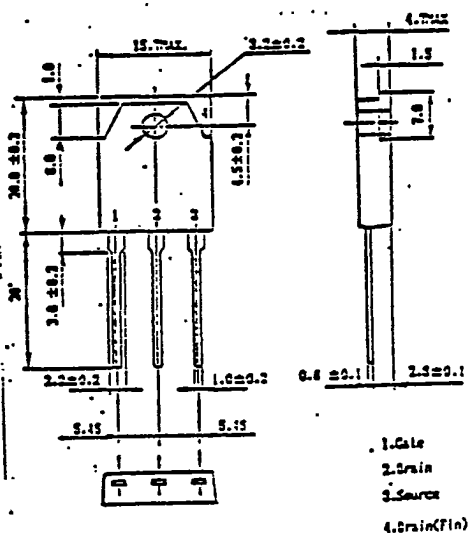


## PRELIMINARY SPECIFICATION

## MOS FIELD EFFECT TRANSISTOR

**2SK819**
**FAST SWITCHING .**  
**N-CHANNEL SILICON POWER MOS FET**

PACKAGE DIMENSIONS (Millim)



## Features

Suitable for switching power supplies,  
 actuator controls and pulse circuits  
 Low  $R_{DS(on)}$

Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

|                                               |              |                              |
|-----------------------------------------------|--------------|------------------------------|
| Drain to Source Voltage                       | $V_{DS}$     | 500V                         |
| Gate to Source Voltage                        | $V_{GS}$     | $\pm 20V$                    |
| Continuous Drain Current                      | $I_D(DC)$    | $\pm 10A$                    |
| Pulse Drain Current                           | $I_D(pulse)$ | $* \pm 30A$                  |
| Total Power Dissipation                       | $P_T$        | 3.0W                         |
| Total Power Dissipation                       | $P_{T*}$     | 100W                         |
| Channel Temperature                           | $T_{ch}$     | 150 $^\circ\text{C}$         |
| Storage Temperature                           | $T_{stg}$    | -55 to +150 $^\circ\text{C}$ |
| * $PW \leq 100 \mu s$ , Duty Cycle $\leq 2\%$ |              |                              |
| ** $T_c = 25^\circ\text{C}$                   |              |                              |

Electrical Characteristics ( $T_a = 25^\circ\text{C}$ )

| Characteristics                     | Symbol        | Min. | Typ. | Max.      | Unit     | Test Conditions                |
|-------------------------------------|---------------|------|------|-----------|----------|--------------------------------|
| Drain Leakage Current               | $I_{DSS}$     |      |      | 100       | $\mu A$  | $V_{DS} = 500V, V_{GS} = 0$    |
| Gate to Source Leakage Current      | $I_{GSS}$     |      |      | $\pm 100$ | nA       | $V_{GS} = \pm 20V, V_{DS} = 0$ |
| Gate to Source Cutoff Voltage       | $V_{GS(off)}$ | 1.5  |      | 3.5       | V        | $V_{DS} = 10V, I_D = 1.0mA$    |
| Forward Transfer Admittance         | $y_{fs}$      | 3.0  |      |           | S        | $V_{DS} = 10V, I_D = 5.0A$     |
| Drain to Source On-State Resistance | $R_{DS(on)}$  |      | 0.70 | 1.0       | $\Omega$ | $V_{GS} = 10V, I_D = 5.0A$     |
| Input Capacitance                   | $C_{iss}$     |      | 1270 |           | pF       | $V_{DS} = 10V, V_{GS} = 0$     |
| Output Capacitance                  | $C_{oss}$     |      | 320  |           | pF       |                                |
| Reverse Transfer Capacitance        | $C_{rss}$     |      | 70   |           | pF       | $f = 1.0MHz$                   |
| Turn-On Delay Time                  | $t_d(on)$     |      | 15   |           | ns       | $I_D = 5.0A$                   |
| Rise Time                           | $t_r$         |      | 20   |           | ns       | $V_{GS(on)} = 10V$             |
| Turn-Off Delay Time                 | $t_d(off)$    |      | 60   |           | ns       | $V_{cc} = 150V$                |
| Fall Time                           | $t_f$         |      | 30   |           | ns       | $R_L = 30 \Omega$              |

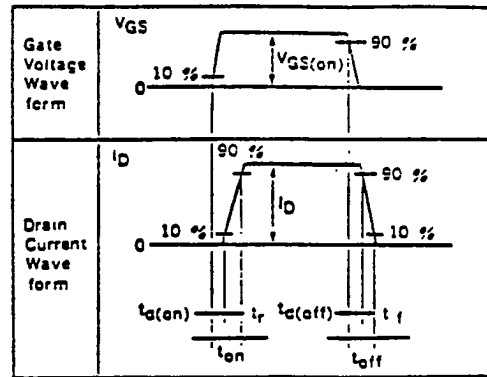
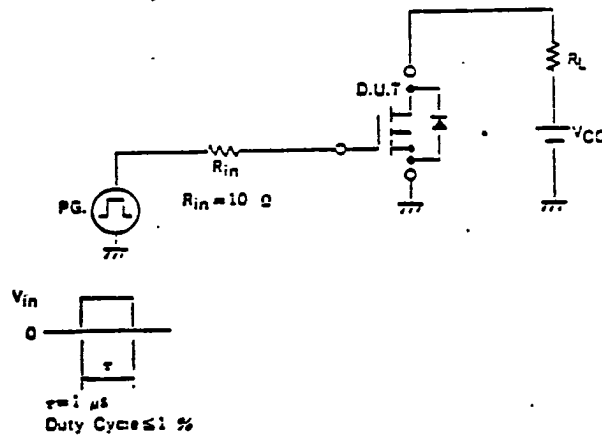
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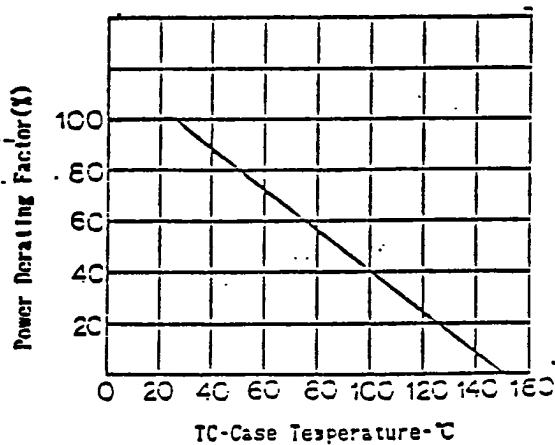
6427525 N E C ELECTRONICS INC  
TURN-ON AND TURN-OFF TIME TEST CIRCUIT

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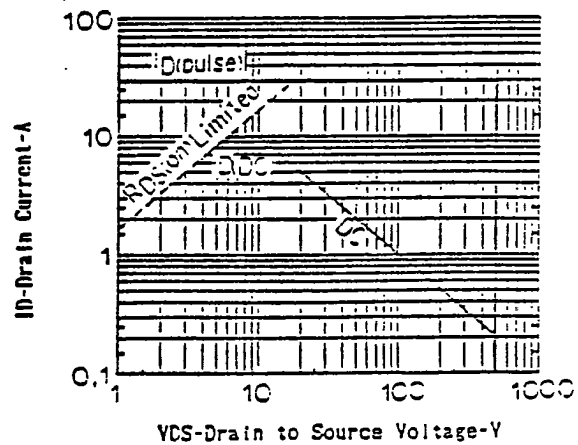
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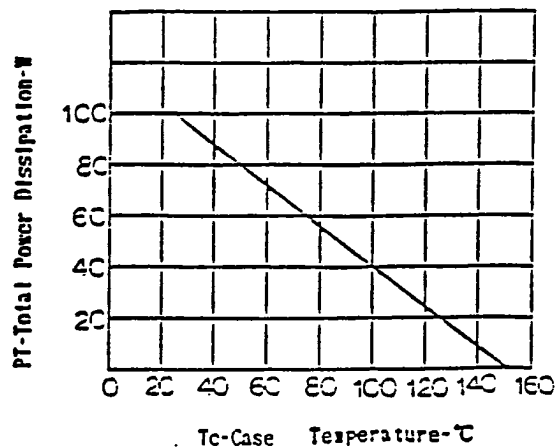
DERATING FACTOR OF FORWARD BIAS  
SAFE OPERATING AREA



FORWARD BIAS SAFE OPERATING AREA



TOTAL POWER DISSIPATION vs.  
CASE TEMPERATURE



DRAIN CURRENT vs. DRAIN TO  
SOURCE VOLTAGE

